

REMARKS

Claims 1-4, 6, 19, 20 and 23 are pending in the present application. Applicants note that Claims 5, 7-18, 21, 22, and 24-31 were cancelled in the Amendment mailed on May 7, 2002. Claims 4 and 6 have been canceled, and Claims 1, 19, 20 and 23 have been amended, leaving Claims 1-3, 19, 20 and 23 for consideration upon entry of the present Amendment.

Support for the amendments to Claim 1 can be found at least in Claims 4 and 6 as originally filed.

Claims 19, 20 and 23 have been amended merely to change their dependencies.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 102(b and e) and 35 U.S.C. § 103(a)

Claims 18, 21, 22 and 24-31 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Vaughn, Takahashi, Chen, Gujarathi or Grimm. The cancellation of Claims 18, 21, 22 and 24-31 in the Amendment dated May 7, 2002 renders this rejection moot. Withdrawal of the rejections under 35 U.S.C. § 102(b) is requested.

Claims 18, 21, 22 and 24-31 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by Lee '993, Thames, Selvarajan, Belik, or Pavlyuchenko. The cancellation of Claims 18, 21, 22 and 24-31 in the Amendment dated May 7, 2002 renders this rejection moot. Withdrawal of the rejections under 35 U.S.C. § 102(e) is requested.

Claims 18, 21, 22 and 24-31 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Vaughn, Takahashi, Chen, Gujarathi, Grimm, Lee '993, Thames, Selvarajan, Belik, or Pavlyuchenko. The cancellation of Claims 18, 21, 22 and 24-31 in the Amendment dated May 7, 2002 renders this rejection moot. Withdrawal of the rejections under 35 U.S.C. § 103(a) is requested.

Claims 1-6, 19, 20 and 23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,290,858 to Sasaki (hereinafter "Sasaki"), U.S. Patent No. 5,442,012 to Kempner (hereinafter "Kempner") or U.S. Patent No. 5,872,189 to Bett (hereinafter "Bett"). Claims 1-6, 19, 20 and 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,043,319 to Lee (hereinafter "Lee '319"), U.S. Patent No. 6,114,415 to Bertelo (hereinafter "Bertelo"), or U.S. Patent No. 6,224,981 to Richard (hereinafter "Richard").

Claims 1-6, 19, 20 and 23 further stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Sasaki, Kempner, Bett, Lee '319, Bertelo or Richard. Applicants respectfully traverse the rejections.

The present claims are directed to an additive system for direct addition to poly(vinyl chloride) - containing matrix resins consisting essentially of:

- a. 95 to 30 weight percent of a liquid component, wherein said liquid component comprises water; and
- b. 5 to 70 weight percent of a solid component, wherein said solid component comprises a poly(vinyl chloride) processing aid and an impact modifier for the poly(vinyl chloride) - containing matrix resin, and wherein said impact modifier is a multi-stage copolymer which comprises:
 - i) 90 to 95 weight percent of a polymerized core comprising, as polymerized units, a C₂ to C₁₂ alkyl acrylate, and
 - ii) at least 1 weight percent of a polymerized shell comprising, as polymerized units, a C₁ to C₄ alkyl methacrylate.

Sasaki discloses core/shell polymers having a rubbery phase of C₂ to C₈ acrylate that makes up 5-90 weight% of the core (Column 4, line 24 to Column 5, line 4). The outer shell can comprise 10-50 wt% of methyl methacrylate (Column 5, lines 19-34). Sasaki does not disclose poly(vinyl chloride) resins or additives for poly(vinyl chloride) resins.

In making the rejection, the Examiner points to Claim 1 of Sasaki. Claim 1 of Sasaki is directed to a polyoxymethylene resin comprising a core/shell particle. Present Claim 1 contains the element of a solid component comprising a poly(vinyl chloride) processing aid.

Sasaki is missing this element of present Claim 1.

To anticipate a claim under 35 U.S.C. § 102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Bariant, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Because Sasaki is missing an element of the present claims, it cannot anticipate present Claim 1. Further, because Sasaki does not disclose poly(vinyl chloride) resins or poly(vinyl chloride) processing aids, Sasaki does not render the present claims obvious.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

In the first instance, Sasaki is concerned with core/shell polymer additives for poly(oxy-methylene) resin compositions, wherein the core/shell polymers are free of anions (Claim 1). There is no suggestion that anion-free polymers as disclosed in Sasaki would be effective in poly(vinyl chloride) compositions, and use of such polymers would merely have been 'obvious to try'.

Further, not only does Sasaki fail to disclose the present claim element of a solid component comprising a poly(vinyl chloride) processing aid, Sasaki does not provide any motivation or expectation of success to use a PVC processing aid in its disclosed compositions. It is well known to those of ordinary skill in the art that the properties of poly(oxy-methylene) compositions vary greatly from poly(vinyl chloride) compositions. One of ordinary skill in the art, when reading Sasaki as a whole, would not add a poly(vinyl chloride) processing aid to the compositions of Sasaki. Sasaki thus does not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) and 35 U.S.C. § 103(a) over Sasaki are requested.

Kempner is directed to core/shell additives wherein the core can be a polyacrylate rubber and the shell can be a methyl methacrylate (Column 2, lines 7-26). The rubber core can comprise no more than 86% of the core/shell additive (Column 8, lines 50-54).

The present claims are directed to an additive comprising a core/shell polymer wherein the rubbery core comprises 90-95% of the core/shell particle. Kempner discloses a core/shell additive with no more than 86% rubber and teaches away from the use of more than 86% rubber. Thus, there is at least one element of the present claims that is not disclosed in Kempner, obviation anticipation.

Further, because Kempner teaches away from using more than 86% rubber, Kempner does not provide the motivation or expectation of success for using 90-95% rubber as presently claimed. Kempner states:

The total rubber (first core polymer) and second core polymer content of the modifier after final encapsulation preferably should be no more than about 86%, or effective redispersion is more difficult to accomplish, which would lead, e.g., to a blend of modifier with PVC of poorer light transmission. This means that the total of all shell polymers should preferably be at least about 14 weight percent of the total core/shell polymer.

(Column 8, lines 50-56) Kempner thus clearly teaches away from impact modifier compositions having greater than 86% rubber, due to problems with redispersion. The present inventors have discovered, however, that the high levels of alkyl acrylate presently claimed provide significantly higher notched Izod impact values than prior art core/shell polymers (Specification, p. 10, lines 14-16). The Examples set forth in Table 4, page 32, clearly show improved notched Izod impact values for compositions containing 90-95% butyl acrylate, compared to those containing 85% or less. Kempner thus does not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) and 35 U.S.C. § 103(a) over Kempner are requested.

Bett teaches a water-redispersible core/shell powder (Abstract). The core can be an alkyl acrylate and the shell can be a methyl methacrylate (Column 2, lines 19-23, Column 3, lines 25-27). Bett does not disclose additives for poly(vinyl chloride) resins, particularly processing aids, and thus does not anticipate present Claim 1.

Because Bett does not teach the present claim element of a solid component comprising a poly(vinyl chloride) processing aid, Bett is missing an element of the present claims. Further, because Bett is not concerned with poly(vinyl chloride) resins and additives for poly(vinyl chloride) resins, Bett does not provide the motivation or expectation of success for the present claims. This is particularly so where, as here, a liquid core/shell polymer as presently claimed enables the design of lubricating processing aids with better lubrication and processability at reduced loadings in PVC (Specification p. 10, lines 12-14). Combination of a PVC processing aid with the core/shell compositions of Bett would have been merely obvious to try, which is not the proper standard in determining obviousness. Bett thus does not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(b) and 35 U.S.C. § 103(a) over Bett are requested.

Lee '319 is directed to a method of preparing a void-type plastic pigment (Abstract). Lee '319 discloses a core/shell particle having an acrylate ester core and a methyl methacrylate shell, but does not disclose the ratio of the core to the shell (see, for example, Claim 1). Lee '319 only disclose use of the pigments in polycarbonate films ("Experimental Example", Col. 6), and thus does not disclose poly(vinyl chloride) resins or additives for poly(vinyl chloride) resins.

First, Lee '319 does not disclose the ratio of the core to the shell as presently claimed. Second, present Claim 1 contains the element of a solid component comprising a poly(vinyl chloride) processing aid. Lee '319 is missing these elements of present Claim 1, and thus cannot anticipate the present claims.

In addition, because Lee '319 does not teach or suggest the ratios of the presently claimed impact modifier and the present claim element of a solid component comprising a poly(vinyl chloride) processing aid, Lee '319 does not render the claims obvious. One of

ordinary skill in the art would not choose the presently claimed core/shell ratios absent some teaching that such ratios are desirable, as these ratios are higher than those typically employed. Further, because Lee '319 is not concerned with poly(vinyl chloride) resins and additives for poly(vinyl chloride) resins, it does not provide the motivation or expectation of success for the present claims. One of ordinary skill in the art, when reading Lee '319 as a whole, would not add a poly(vinyl chloride) processing aid to the compositions of Lee '319. Lee '319 thus does not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) and 35 U.S.C. § 103(a) over Lee '319 are requested.

Bertelo discloses a method of making a polymer matrix (Abstract). The latex can comprise core/shell particles comprising alkyl acrylate and methyl methacrylate monomers (Column 3, lines 35-58). Bertelo does not disclose poly(vinyl chloride) resins or additives for poly(vinyl chloride) resins.

First, Bertelo does not disclose 90 to 95 weight percent of a polymerized core as required by the present claims. Second, present Claim 1 contains the element of a solid component comprising a poly(vinyl chloride) processing aid. Bertelo is missing these elements of Claim 1, and thus cannot anticipate the present claims.

Further, because Bertelo does not teach or suggest the ratios of the presently claimed impact modifier and the present claim element of a solid component comprising a poly(vinyl chloride) processing aid, Bertelo does not render the claims obvious. One of ordinary skill in the art would not choose the presently claimed core/shell ratios absent some teaching that such ratios are desirable as these ratios are higher than those typically employed. Further, because Bertelo is not concerned with poly(vinyl chloride) resins and additives for poly(vinyl chloride) resins, it does not provide the motivation or expectation of success for the present claims. For the reasons outlined above, one of ordinary skill in the art, when reading Bertelo as a whole, would not add a poly(vinyl chloride) processing aid to the compositions of Bertelo. Bertelo thus does not render the present claims obvious., it does not provide the motivation or expectation of success for the present claims.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) and 35 U.S.C. § 103(a) over Bertelo are requested.

Richard discloses water-dispersible powders comprising core/shell particles (Abstract). The core/shell particle comprises no more than 90 weight% of an alkyl acrylate, and a shell that can comprise methyl methacrylate (Column 2, lines 1-13). Richard does not disclose poly(vinyl chloride) resins or additives for poly(vinyl chloride) resins. Present Claim 1 contains the element of a solid component comprising a poly(vinyl chloride) processing aid. Richard is missing this element of Claim 1, and thus cannot anticipate the present claims.

Because Richard does not teach or suggest the present claim element of a solid component comprising a poly(vinyl chloride) processing aid, Richard does not render the present claims obvious. Further, because Richard is not concerned with poly(vinyl chloride) resins and additives for poly(vinyl chloride) resins, it does not provide the motivation or expectation of success for the present claims. For the reasons outlined above, one of ordinary skill in the art, when reading Richard as a whole, would not add a poly(vinyl chloride) processing aid to the compositions of Richard. Richard thus does not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of the rejections under 35 U.S.C. §102(e) and 35 U.S.C. § 103(a) over Richard are requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise,
please charge them to Deposit Account No. 18-1850 maintained by Assignee.

Respectfully submitted,

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